Lesquerella vicina (Brassicaceae), a New Species from the Uncompahgre River Valley in Western Colorado

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ABSTRACT. *Lesquerella vicina* (Brassicaceae) is proposed for a perennial with white flowers found near Montrose, Colorado. It is most closely related to the yellow-flowered *L. rectipes*, differing additionally by having broader basal leaves. In the Montrose area it grows on Mancos Shale from 6000 to 7200 feet at the ecotone between pinyon-juniper woodland and salt desert scrub. At the lower elevation the plants have a more ephemeral growth form, but at the higher elevations the plants are longer-lived perennials with well-developed caudices.

Lesquerella vicina Anderson, Reveal & Rollins, sp. nov. TYPE: U.S.A. Colorado: Montrose Co., on a small flat-topped mesa overlooking the Uncompahgre River just S of 66500 Kinikin Road about 4 air mi. SE of Montrose, on grayish white soil atop adobe Mancos Shale associated with *Artemisia, Yucca,* and *Opuntia* at about 6050 ft. elev. in sec. 10, T48N, R9W, 29 June 1995, *Reveal 7492* (holotype, GH; isotypes, BM, BRY, COLO, MARY, MO, NY, RM, TEX, UC, US). Figure 1.

A *L. rectipes* folius latioribus et floribus albus differt.

Plants first-year flowering perennials lacking a well-developed caudex, older plants with a well-developed caudex, densely pubescent, the foliage gray-green and scabrous; trichomes substipitate, the rays 3–6, slightly fused or less frequently distinct, forked or bifurcate, appressed to spreading; stems (of fruiting plants) 1–2.5 dm long, few to several, ascending (in flower) or nearly prostrate (in fruit), simple; basal leaves rosulate, 2–7 cm long, the blades ovate to rhomboid or rotund, (1)2–3.5 cm long, (1)1.5–2.5 cm wide, flat, entire or occasionally shallowly repand, narrowing abruptly to the 1–3(3.5)-cm-long petiole; cauline leaves (0.7)1–2.5 cm long, the blades narrowly elliptic to elliptic, 0.7–1.8 cm long, 0.4–0.8 cm wide, flat, entire, narrowing gradually to the 0.2–0.5(0.7)-cm-long petiole; inflorescences dense, the buds ellipsoid; sepals 4–6 mm long, elliptic, lavender under the grayish trichomes; petals 6–10 mm long, white, often tinged with lavender without, pale yellow at the base of each petal within, glabrous, the blade narrowly spathulate and not differentiated into a blade and claw; filaments slender, 4–5.5 mm long; stamens linear, 1.2–1.6 mm long; infructescence elongated; pedicels (0.4)0.6–1.2 cm long, stout, curved to slightly sigmoid but always ascending; siliques 0.5–0.7 cm long, subsessile, nearly globose to obovoid, the valves densely pubescent with spreading trichomes without, glabrous within; septum entire, smooth, glabrous, the funicles attached ⅓ or less of their length; styles 4–6 mm long, glabrous, slender, the stigmas expanded; ovules 4(6) per locule; seeds 2–2.2 mm long, ovate, flattened, orangish brown, faintly margined; cotyledons accumbent, about as long as the radicle.

Lesquerella vicina (from *vicinus,* neighboring, alluding to the type locality, near the home of Reveal's Montrose neighbors Stan Hersh and Hazel Pollard) is most likely a first-year flowering perennial. The spring of 1995 was particularly moist in the Montrose area, and the specimens collected in late June of 1995 flowered the first year of their duration. The plant has not been seen during pre-

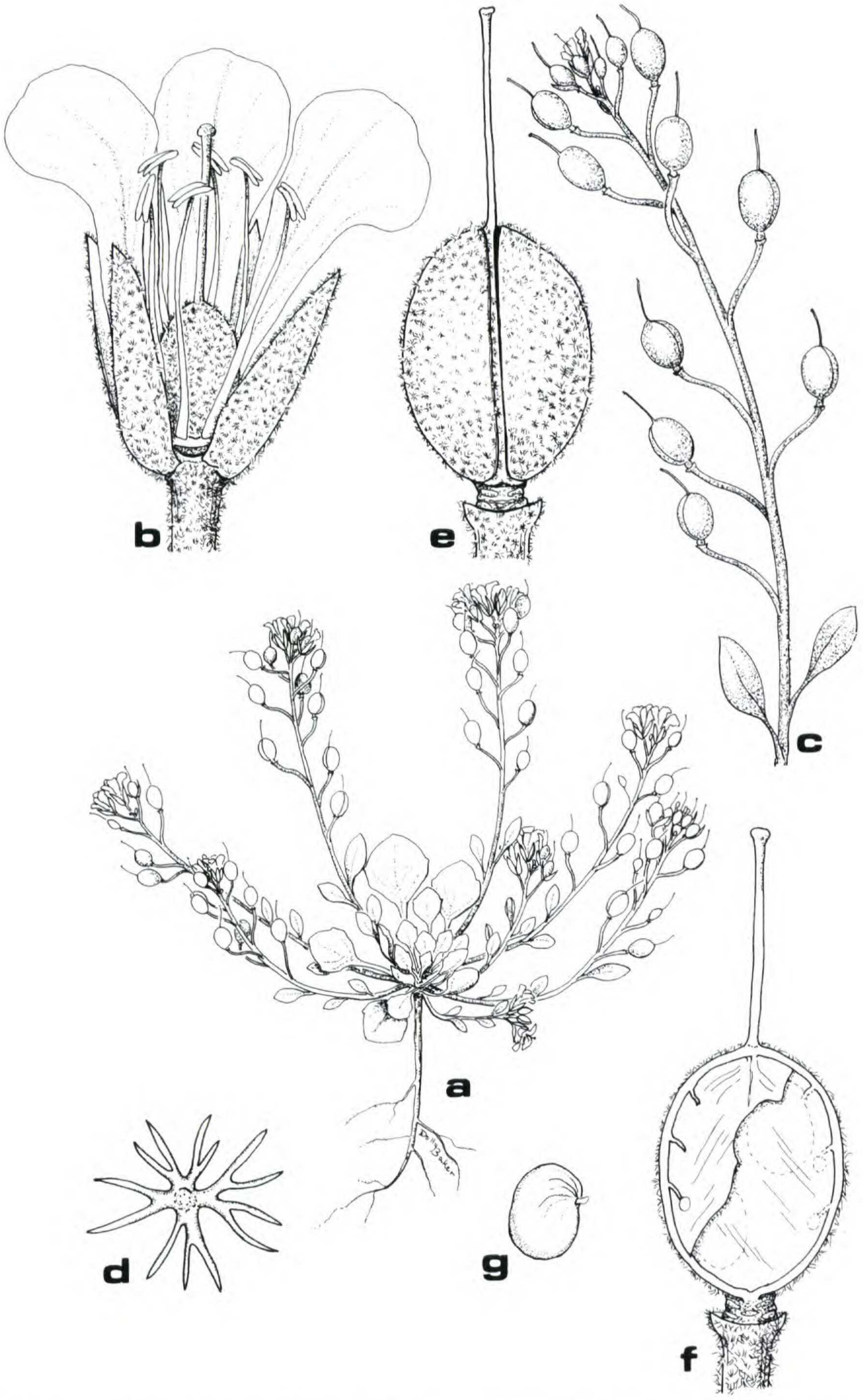

Figure 1. *Lesquerella vicina* Anderson, Reveal & Rollins. —a. General habit (×0.5). —b. Details of a flower (×10). —c. An inflorescence (×5). —d. A stellate hair (×50). —e, f. Two views of a silique (×20). —g. A seed (×20).

vious visits to the type location and it is suggested that unless the area is subjected to two or more years of favorable conditions, individual plants of *L. vicina* at low elevations will only live a single growing season. Fully mature fruits with seeds were produced in 1995. This may be one of those species that maintains a seed bank but appears only when favorable conditions occur. However, specimens

from the Billie Creek area (*Anderson 87-61, 88-15b,* and *88-18*), which grow a thousand feet higher in elevation than those at the type locality, have well-developed caudices and appear to be short-lived perennials. Perhaps, increased precipitation at the higher elevation locality allows these plants to live longer and develop a perennial growth form. At the lower elevations, the drier conditions result in a more ephemeral life cycle.

The upper Uncompahgre River Valley between Ridgeway and Montrose forms a narrow cul-de-sac of desert badlands (adobes) and pinyon-juniper woodlands on Mancos Shale surrounded on three sides by montane forests of the San Juan Mountains and the Uncompahgre Plateau. The Uncompahgre River flows northward out of this narrow valley to its confluence with the Gunnison River at Delta, Colorado. These isolated badlands around Montrose were already known to contain a number of local endemics, including *Lomatium concinnum* (Osterhout) Mathias and *Penstemon retrorsus* Payson ex Pennell. On a search for *Lomatium concinnum*, Anderson found an undescribed *Lesquerella* approximately 15 miles south of Montrose in 1987. Reveal independently discovered this same entity about 4 miles south of Montrose at the subsequent type locality in 1995. The earliest collection of *L. vicina*, although it was unrecognized as representing an undescribed species, was made by Payson (*669*) in 1915. The Payson collection, in fruit only, was first identified as *L. prostrata* A. Nelson, a local species of southwestern Wyoming and adjacent Utah. Later Payson annotated the specimen in GH as *L. rectipes.* Another specimen of *L. vicina* had been collected previously by Welsh et al. (*22765*) southwest of Montrose on a powerline survey for rare plants. Welsh (pers. comm.) thought this specimen, where white flowers were noted, might represent a new species; but, it was unidentified until Rollins placed it in *L. rectipes* with a question mark and a notation that white flowers were unknown in that species. Welsh and Anderson revisited this locality in 1990. (Despite label inconsistencies, *Welsh et al. 22765, Welsh & Anderson 24435,* and *Anderson & Welsh 90-46* are from the same locality.) An earlier study (Rollins & Shaw, 1973) did include the Payson specimen, which was sufficiently different from *L. rectipes* to provoke an interest in looking for the plant in the vicinity of Montrose. No population of *L. vicina* was found there in 1981 although three collections (*Rollins & Rollins 8129, 8133, 8136,* GH) of *L. rectipes* were made to the southwest of that area.

The combination of broad, basal leaves that abruptly narrow to the petiole, globose to obovoid siliques with four (rarely six) ovules per locule, forked or bifurcate 3–6-rayed trichomes, an erect to prostrate habit, and an entire septum all associate *Lesquerella vicina* with *L. rectipes,* a species in which many populations lack a well-developed caudex. *Lesquerella rectipes* ranges from southwestern Colorado and eastern and south-central Utah southward to northern Arizona and northwestern New Mexico. Rollins (1993) noted that the taxon is exceedingly variable, but did not recognize the combinations of features considered here as representing *L. vicina.* The new species may be readily distinguished from *L. rectipes* by its broader basal leaves (1–2.5 cm vs. 0.3–1.2 cm), longer petioles, lavender sepals, white petals with pale yellow bases that are not differentiated into a blade and claw and that become lavender with age, densely (rather than sparsely) pubescent siliques, glabrous styles, and a slightly margined, orangish brown seed. The most distinctive character for *L. vicina* is the white petals. This feature alone will distinguish the species from all others in the Intermountain and Rocky Mountain West.

The range of *Lesquerella vicina* is currently known to extend for 20 miles, from Billie Creek 15 miles south of Montrose to Bostwick Park 5 miles north of Montrose. Within this range there are four different localities; from south to north they are Billie Creek, the type locality, the Montrose-Nucla Road site, and Bostwick Park. Its edaphic habitat is usually Mancos Shale, often with sandstone fragments, from 6000 to 7200 feet, where it occurs at the ecotone between pinyon-juniper woodland and salt desert scrub. At the type locality, *Lesquerella vicina* occurs with mixed desert shrub (*Artemisia, Chrysothamnus, Tetradymia, Opuntia,* and *Yucca*) but does not seem to extend lower in elevation to the adobe badlands and salt desert scrub.

Paratypes. U.S.A. **Colorado:** Montrose County, dry stony slopes of hills E of Montrose, 6000 ft., 15 June 1915, *Payson 669* (GH); pinyon-juniper community, sandy substrate and sandstone outcrops, "ca. 7.5 mi. SW of Montrose, T18N, R10W, sec. 18" [township incorrect], ca. 6800 ft., 15 May 1984, *Welsh et al. 22765* (BRY, GH); ca. 6.5 W of Oak Grove on Hwy. 90 (Montrose-Nucla Rd.), 0.25 mi. beyond switchbacks, on mesa top of Dakota sandstone with pinyon-juniper woodland, 6720 ft., T48N, R10W, sec. 8 SESESW, 16 May 1990, *Anderson & Welsh 90-46* (COLO, GH); pinyon-juniper community on Dakota Sandstone, "9.5 mi SW of Montrose, T49N, R85W, sec. 2" [range and township incorrect], ca. 6720 ft., 16 May 1990, *Welsh & Anderson 24435* (BRY); N end of Bostwick Park, at head of draw with road leading to Montrose, Mancos Shale hillside with sandstone fragments, growing in open pinyon-juniper woodland with *Artemisia tridentata* Nutt., 6800 ft., T49N, R8W, sec. 33 SESW, 21 May 1990, *J. Anderson 90-69* (COLO); ca. 4 mi. S of Montrose and 2 mi. E of Hwy. 550, Mancos Shale hill with water tank

above W side of South Canal, growing on hilltop with scattered pinyon-juniper with *Atriplex confertifolia* (Torr. & Frém.) S. Wats., *Artemisia spinescens* DC., and *Yucca*, 6240 ft., T48N, R9W, sec. 24 NENW, 22 May 1991, *J. Anderson 91-31* (GH); Ouray County, Billie Creek State Wildlife Area, ca. 1.5 mi. E of U.S. Hwy. 550, access from Hwy. 550 is 1.7 mi. E. on Billie Creek Rd. and then 1.6 mi. S on Chaffee Gulch Rd., Mancos Shale hill along Chaffee Gulch, growing under scattered pinyon-juniper with *Peraphyllum ramosissimum* Nutt., *Amelanchier alnifolia* (Nutt.) Nutt., *Cercocarpus montanus* Raf., *Yucca*, *Artemisia tridentata*, and *Lomatium concinnum* (Osterh.) Mathias, 7000 ft., T46N, R8W, sec. 3 NWSE, 1 June 1987, *J. Anderson & J. Ferguson 87-56*, 5 June 1987, *J. Anderson & J. Ferguson 87-61* (GH), 9 May 1988, *J. Anderson 88-15a* (ASU) and *88-15b* (ASU); near Billie Creek Wildlife Area, ca. 0.5 mi. E of U.S. Hwy. 550, S-facing slope of ridge between Billie Creek and Chaffee Gulch, Mancos Shale with sandstone fragments on the surface, growing in open understory of pinyon-juniper woodland with *Amelanchier alnifolia*, *Peraphyllum ramosissimum*, *Cercocarpus montanus*, and *Yucca*, 7200 ft., T46N, R8W, sec. 4 NWNE, 10 May 1988, *J. Anderson 88-18* (COLO); Billie Creek Wildlife Area, 0.5 mi. E of Hwy. 550 along Billie Creek Rd., S-facing slope of interbedded shale and sandstone with *Atriplex canescens* (Pursh) Nutt., *Hymenoxys acaulis* (Pursh) K.F. Parker, *Opuntia*, and *Lesquerella rectipes* Woot. & Standl., 6550 ft., T47N, R8W, sec. 33 NWNW, 10 May 1988, *Anderson 88-21* (GH).

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